

A<sup>2</sup>  
--10. A vaporizer for vaporizing a liquid and mixing the vaporized liquid with a carrier gas, said vaporizer comprising:

a valve body having a first aperture, a second aperture and a third aperture;

a valve seat through which fluid flows;

a gas inlet port for receiving said carrier gas, said gas inlet port connected to said first aperture through a first fluid channel;

a liquid inlet port for receiving the liquid, said liquid inlet port connected to said second aperture through a second fluid channel;

a valve mechanism including a valve element disposed adjacent to and opposite said valve seat, said valve element being continuously adjustable by said valve mechanism over a continuous range of settings between and including a fully closed position and a fully open position; and

an outlet port connected to said third aperture through a third fluid channel.--

--11. The vaporizer of claim 10 wherein in its fully closed position, the valve element abuts said valve face and during operation prevents flow of liquid through said second aperture.--

--12. The vaporizer of claim 10 wherein said valve seat has a seat face that is opposed to said valve element and in which said second aperture is formed.--

--13. The vaporizer of claim 12 wherein said seat face is planar.--

--14. The vaporizer of claim 13 wherein said seat face is circular and has a diameter of about 0.5 cm.--

--15. The vaporizer of claim 12 wherein said valve element has a valve face that is opposed to said valve seat.--

--16. The vaporizer of claim 15 wherein said valve face is planar.--

--17. The vaporizer of claim 10 wherein said valve seat has a seat face that is planar and opposed to said valve element and in which said second aperture is formed, said valve element has a valve face that is planar and opposed to said valve seat, and said seat face and valve face are parallel to each other.--

--18. A chemical vapor deposition system using a liquid reactant and a carrier gas, comprising:

a chemical vapor deposition chamber having a gas inlet port, and

a liquid reactant vaporizer having an outlet port connected to said chamber inlet port, said vaporizer comprising:

a valve body having a first aperture, a second aperture, and a third aperture;

a valve seat;

a gas inlet port for receiving said carrier gas, said gas inlet port connected to said first aperture through a first fluid channel;

a liquid inlet port for receiving the liquid reactant, said liquid inlet port connected to said second aperture through a second fluid channel;

a valve mechanism including a valve element disposed adjacent to said valve seat and forming a valve region, said valve seat being continuously adjustable by said valve mechanism over a continuous range of settings between and including a fully closed position and a fully open position so as to variably control the flow rate of the fluid; and

an outlet port connected to said third aperture through a third fluid channel.--

--19. A vaporizer for vaporizing a liquid and mixing the vaporized liquid with a carrier gas, said vaporizer comprising:

a valve body having a first aperture, a second aperture and a third aperture;

a valve seat through which fluid flows;

a gas inlet port for receiving said carrier gas, said gas inlet port connected to said first aperture through a first fluid channel;

a liquid inlet port for receiving the liquid, said liquid inlet port connected to said second aperture through a second fluid channel;

a valve mechanism including a valve element disposed adjacent to and opposite said valve seat, said valve element being continuously adjustable by said valve mechanism over a continuous range of settings between and including a fully closed position and a fully open position; and

an outlet port connected to said third aperture through a third fluid channel,

the valve body defining a first volume in adjustable, fluid communication with a second volume through the valve seat wherein during normal operation the pressure in the first volume is different than the pressure in the second volume.--

--20. The vaporizer of claim 19 wherein in its fully closed position, the valve element abuts said valve face and during operation prevents flow of liquid through said second aperture.--

--21. The vaporizer of claim 19 wherein said valve seat has a seat face that is opposed to said valve element and in which said second aperture is formed.--

--22. The vaporizer of claim 19 wherein said seat face is planar.--

--23. The vaporizer of claim 22 wherein said seat face is circular and has a diameter of about 0.5 cm.--

--24. The vaporizer of claim 21 wherein said valve element has a valve face that is opposed to said valve seat.--

--25. The vaporizer of claim 24 wherein said valve face is planar.--

--26. The vaporizer of claim 19 wherein said valve seat has a seat face that is planar and opposed to said valve element and in which said second aperture is formed, said valve element has a valve face that is planar and opposed to said valve seat, and said seat face and valve face are parallel to each other.--

--27. A chemical vapor deposition system using a liquid reactant and a carrier gas, comprising:

a chemical vapor deposition chamber having a gas inlet port, and  
a liquid reactant vaporizer having an outlet port connected to said chamber inlet port, said vaporizer comprising:

a valve body having a first aperture, a second aperture, and a third aperture;

a valve seat;

a gas inlet port for receiving said carrier gas, said gas inlet port connected to said first aperture through a first fluid channel;

a liquid inlet port for receiving the liquid reactant, said liquid inlet port connected to said second aperture through a second fluid channel;

a valve mechanism including a valve element disposed adjacent to said valve seat and forming a valve region, said valve seat being continuously adjustable by said valve mechanism over a continuous range of settings between and including a fully closed position and a fully open position so as to variably control the flow rate of the fluid; and

the outlet port connected to said third aperture through a third fluid channel,

the valve body defining a first volume in adjustable, fluid communication with a second volume through the valve seat wherein during normal operation the pressure in the first volume is different than the pressure in the second volume.--

--28. A method for vaporizing a liquid and mixing the vaporized liquid with a carrier gas, the method comprising:

a) providing a vaporizer having:

a valve body having a first aperture, a second aperture and a third aperture;

a valve seat through which fluid flows;